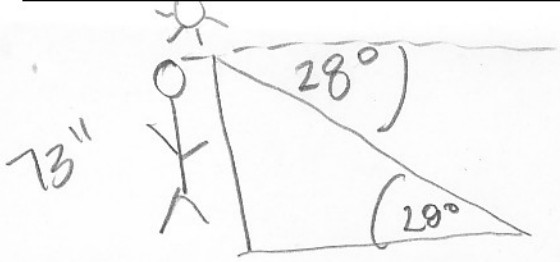


$6'1'' = 6 \times 12 + 1 = 73''$

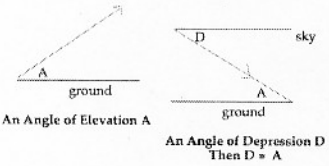
$\tan 28° = 73/x$ $x = 137.293$ inches

$x =$ 16.441 feet

Obj: Students will be able to find the measure of an angle using inverse trig relationships.

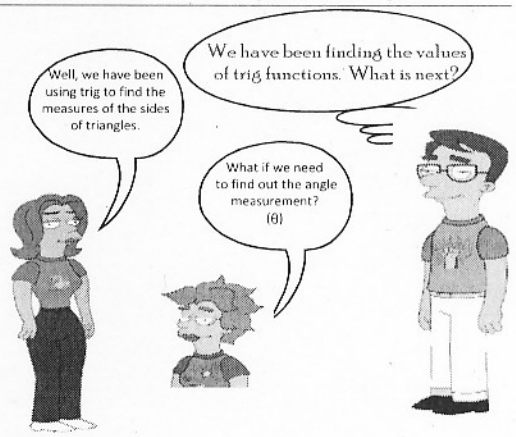
Ticket in:

Santiago is 6'1" tall. Find the length of his shadow if the angle of elevation the sun is 28°. (in feet)

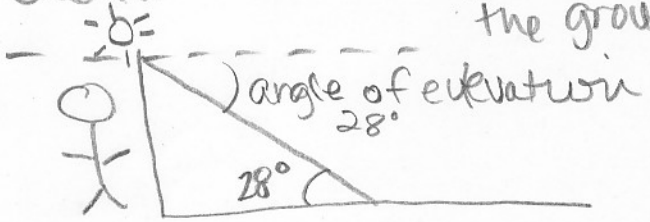


Slide #1

Obj: Students will be able to find the measure of an angle using inverse trig relationships.



Make sure that students understand that the sun is on the horizontal so 28° is on the ground!



Obj: Students will be able to find the measure of an angle using inverse trig relationships.

To **prove a point**, Mrs. Bashford solved the following equation for her students.

$$\frac{\sqrt{x}}{\sqrt{\ }} = \frac{4}{\sqrt{\ }}$$

$$x = \frac{4}{\sqrt{\ }}$$

What point is she trying to make?

Obj: Students will be able to find the measure of an angle using inverse trig relationships.

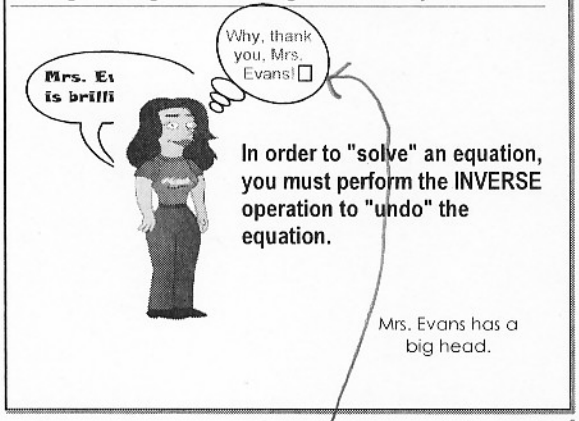
$$\frac{\log_2 X}{\log_2} = \frac{3}{\log_2}$$

$$X = \frac{3}{\log_2}$$

Why or why not?

* Trying to help kids understand that you must apply the inverse operation. Just because two things are next to each other that doesn't mean (always) they are being multiplied.

Obj: Students will be able to find the measure of an angle using inverse trig relationships.



Click on square inside the thought bubble! Sound!

Obj: Students will be able to find the measure of an angle using inverse trig relationships.

Addition will "undo" Sub

Division will "undo" Mult

Squaring will "undo" √

To "undo" an exponential equation, you must log or ln both sides.

To "undo" a logarithmic equation, you must e both sides.

(raise to a power of e)

Obj: Students will be able to find the measure of an angle using inverse trig relationships.

$\sqrt{x} = 4$

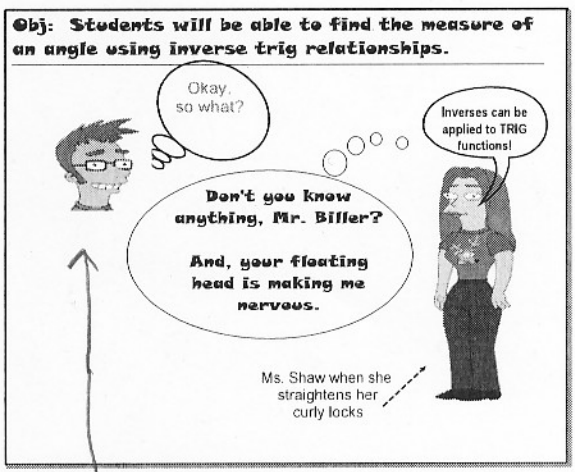
Think inverses!!!!

$(\sqrt{x})^2 = (4)^2$

$x = 16$

Is it possible to "undo" Mr. Biller's CrAzY gene?

Obj: Students will be able to find the measure of an angle using inverse trig relationships.

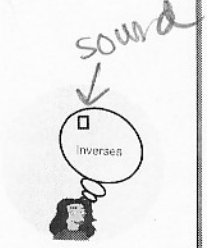


invisible square below Billers neck has sound!

Obj: Students will be able to find the measure of an angle using inverse trig relationships.

Solving trigonometric functions is like solving equations!

Solve: $\frac{3}{4}x - 10 = 20$



$\frac{3}{4}x - 10 = 20$

$\frac{3}{4}x = 30 \left(\frac{4}{3}\right)$

$\left(\frac{4}{3}\right)$

$x = 40$

Obj: Students will be able to find the measure of an angle using inverse trig relationships.

Think about it!

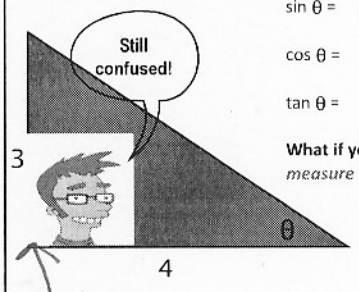
As of right now, you can find the values of the 6 trig functions...

$\sin\theta =$ $\csc\theta =$

$\cos\theta =$ $\sec\theta =$

$\tan\theta =$ $\cot\theta =$

What if you needed to know the *measure of the angle*?



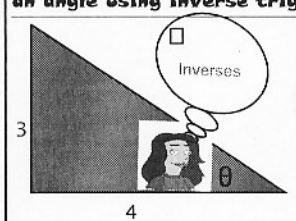
Sound at corner!

$\sin\theta$ 3/5 $\csc\theta$ 5/3

$\cos\theta$ 4/5 $\sec\theta$ 5/4

$\tan\theta$ 3/4 $\cot\theta$ 4/3

Obj: Students will be able to find the measure of an angle using inverse trig relationships.



Hint --->
Look on your calculator

Notation:

Inverse sin θ -->
$\sin^{-1}(\sin\theta)$ OR
$\arcsin(\sin\theta)$

New Notation!

$\sin^{-1}\theta = \arcsin\theta$!

Obj: Students will be able to find the measure of an angle using inverse trig relationships.

If $\sin\theta = 3/5$ and we want to know what θ equals...

Perform the inverse operation:
$\sin^{-1}(\sin\theta) = \sin^{-1}(3/5)$

$\sin\theta = 3/5$

$\sin^{-1}(3/5)$

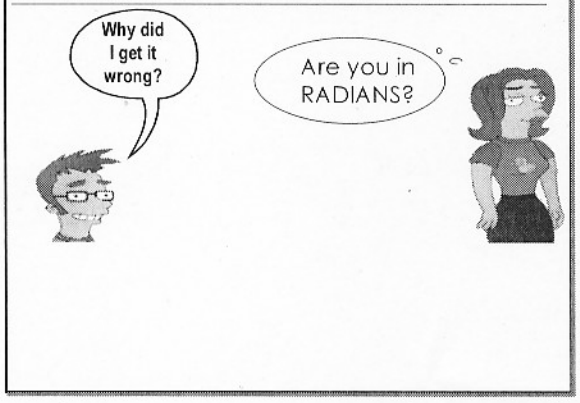
0.644

Try it on your calculator!

If students are in Degree Mode they will get it WRONG!

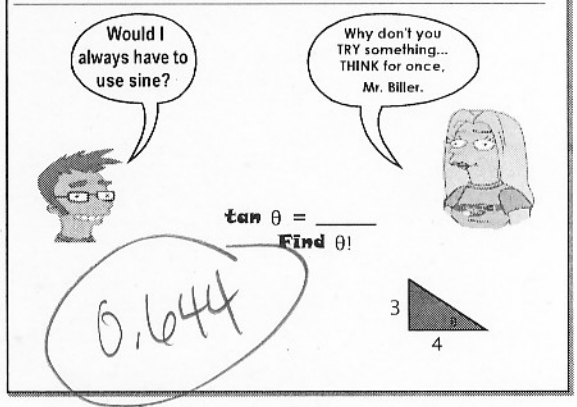
(See next slide!)

Obj: Students will be able to find the measure of an angle using inverse trig relationships.



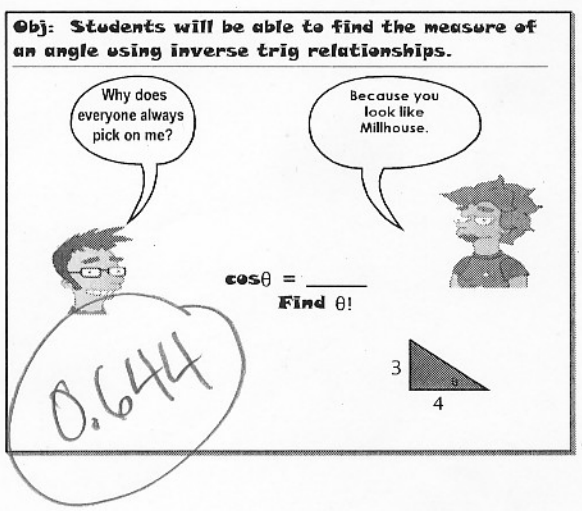
* Radians is default! only use degrees if the problem calls for it! this one did Not!

Obj: Students will be able to find the measure of an angle using inverse trig relationships.

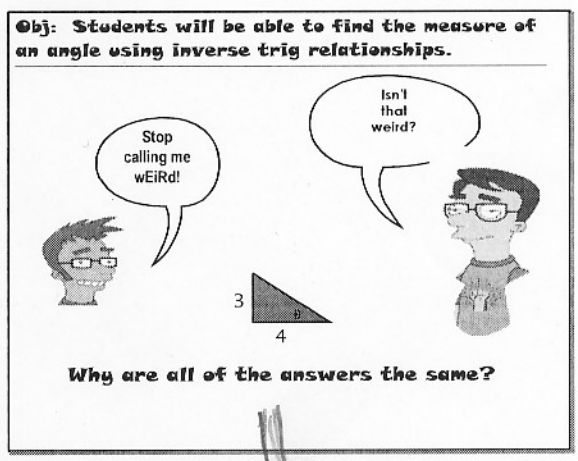


Whether you use sin θ, tan θ or cos θ θ will be the same!

Obj: Students will be able to find the measure of an angle using inverse trig relationships.

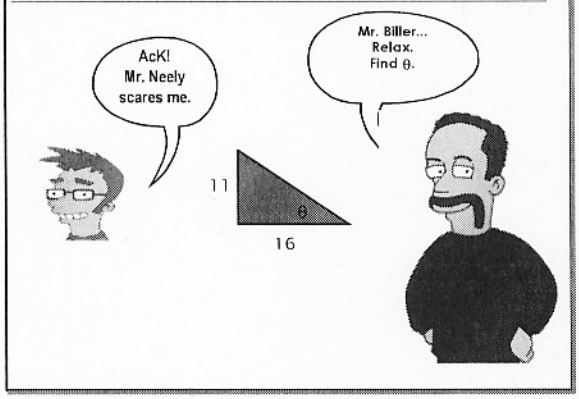


Obj: Students will be able to find the measure of an angle using inverse trig relationships.



the θ doesn't change!

Obj: Students will be able to find the measure of an angle using inverse trig relationships.



Obj: Students will be able to find the measure of an angle using inverse trig relationships.

Be careful of some misconceptions!

- $x^{-1} = 1/x$
- $\sin^{-1}\theta \neq 1/\sin^{-1}\theta$

Why?

Mr. Robble is buff.

0.602

$\tan\theta = \frac{11}{16}$

$\tan^{-1}(\tan\theta) = \tan^{-1}(11/16)$

The inverse of x is 1/x the inverse of $\sin\theta = \sin^{-1}\theta$!

Obj: Students will be able to find the measure of an angle using inverse trig relationships.

Be careful of some misconceptions!

Your calculator MODE should be in RADIANS, unless the problem is specifically asking for degrees!

Obj: Students will be able to find the measure of an angle using inverse trig relationships.

Be careful of some misconceptions!

$\sin\theta = 4/5$ -->

You cannot find θ by dividing by sine!

Have you been listening Mr. Biller?

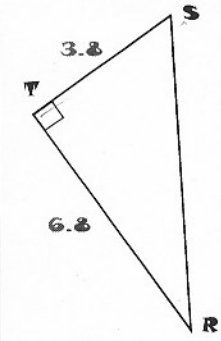
You must undo sin θ by taking the inverse of sine!

this happens A LOT

DEGREES 2

HW: P. 833-834 (32-43all, 46-49 all)

Obj: Students will be able to find the measure of an angle using inverse trig relationships.



To SOLVE a triangle, you will need to find the measures of all the unknown sides and angles.

1 Find the measure of angle R (in degrees)

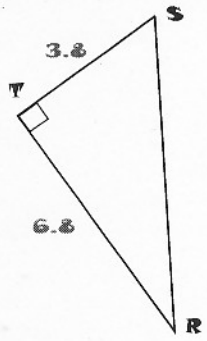
[redacted]

$\tan R = \frac{3.8}{6.8}$

$R = \tan^{-1}(3.8/6.8)$

$\angle R = 29.197°$

Obj: Students will be able to find the measure of an angle using inverse trig relationships.



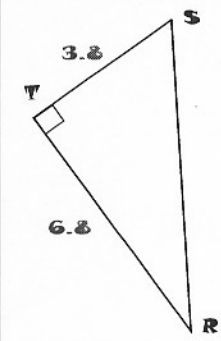
To SOLVE a triangle, you will need to find the measures of all the unknown sides and angles.

2 Find the measure of angle S (in degrees)

$90 + 29.197 + x = 180$

$\angle S = 60.803°$

Obj: Students will be able to find the measure of an angle using inverse trig relationships.



To SOLVE a triangle, you will need to find the measures of all the unknown sides and angles.

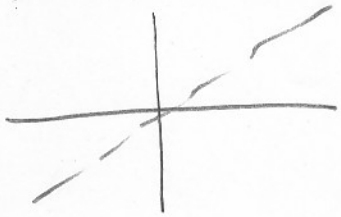
3 Find the length of RS.

$3.8^2 + 6.8^2 = (RS)^2$

Obj: Students will be able to find the measure of an angle using inverse trig relationships.

Use your graphing calculator to graph
$y = \sin x$ and $y = \sin^{-1} x$

What do you notice?



reflection about $y = x$

all inverse are a reflection about $y = x$